

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) ~~A method for hair treatment, comprising:~~  
~~—applying to the hair~~ a composition that contains at least one shape memory polymer P and/or at least one cross-linkable macromer M that forms a shape memory polymer after cross-linking is applied to the hair;

wherein ~~the~~ polymer P and ~~the~~ macromer M are each formed from block polymers having at least a first block which is a polyol selected from polyethers, oligoethers, hydrocarbons having a molecular weight of at least 400 g/mol and at least two alcoholic hydroxyl groups, oligoester diols and polyesters of dicarboxylic acids with diols and at least two additional blocks, which are polyesters of hydroxycarboxylic acids or their lactones;

wherein ~~the~~ macromer M comprises:

a) ~~contains~~ cross-linkable regions that are cross-linkable through chemical bonds, ~~and~~  
b) thermoplastic regions that are not chemically cross-linkable, and  
c) the shape memory polymer formed after cross-linking has at least one transition temperature  $T_{trans}$ ;

and wherein ~~the~~ polymer P comprises:

a) ~~has~~ at least one hard segment that can be cross-linked by means of physical interaction, said hard segment having a first transition temperature  $T'_{trans}$ , which is above room temperature, and

b) ~~has~~ at least one soft segment with a second transition temperature  $T_{trans}$  which is lower than  $T'_{trans}$ ;

~~—arranging the hair into a defined shape before, simultaneously or subsequently to the step of applying to the hair the composition~~  
the hair is arranged into a defined shape; and

—fixing the defined shape is ~~subsequently fixed~~ by chemically cross-linking ~~the~~ macromer M, while forming a shape memory polymer and ~~using~~ physically cross-linking ~~of the~~ polymer P.

2. (Currently Amended) The mMethod according to Claim 1, wherein ~~characterised in that the~~ macromer M has the formula  $A(B-X)_n$  and ~~the~~ polymer P has the formula  $A(B)_n$ , wherein

A is derived from an n-valent polyether or oligoether, hydrocarbons having a molecular weight of at least 400 g/mol and n alcoholic hydroxyl groups, oligoester diols or from a polyester of a dicarboxylic acid with one diol,

B represents a poly(hydroxycarboxylic acid) block, ~~and~~

n represents a number greater than or equal to two, and

X represents a reactive, chemically cross-linkable group.

3. (Currently Amended) The mMethod according to Claim 2, wherein ~~characterised in that~~

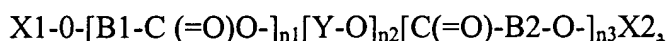
A<sub>—</sub> is selected from polyalkylene glycol ethers of polyvalent alcohols, poly(tetrahydrofurane), dimerdiol, dimerdiol oligoethers, and oligoester diols,

B<sub>—</sub> is selected from poly( $\epsilon$ -caprolactone), poly(pentadecalactone), polylactides, polyglycolides, and poly(lactide-co glycolide),

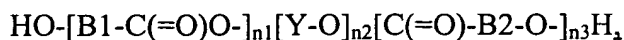
X<sub>—</sub> is selected from ethylenically unsaturated, radically polymerizable groups, and

n<sub>—</sub> is 2, 3 or 4.

4. (Currently Amended) The mMethod according to Claim 1, wherein ~~characterised in that the~~ macromer M has the general formula:



or ~~the~~ shape memory polymer P has the general formula:



wherein

X1 and X2 are the same or different and represent reactive, chemically cross-linkable groups,

B1 and B2 are the same or different and ~~represent~~stand for branched, cyclic or linear alkylene groups with 1 to 40 C atoms,

Y ~~represents~~stands for a branched, cyclic or linear alkylene group with 2 to 30 C atoms or for a polyester block of dicarboxylic acid and diol, and

n1, n2 and n3 are the same or different numbers greater than zero.

5. (Currently Amended) The mMethod according to Claim 4, ~~wherein~~characterised in that

X1 and X2 are ethylenically unsaturated, radically polymerizable groups,

B1 and B2 ~~represent~~stand for branched, cyclic or linear alkylene groups with 2 to 20 C atoms, and

Y ~~represents~~stands for ethylene groups and / or propylene groups.

6. (Currently Amended) The mMethod according to Claim 5, ~~wherein~~characterised in that

X1 and X2 are acrylate or methacrylate,

B1 and B2 ~~represent~~stand for branched or linear alkylene groups with 2 to 20 C atoms,

Y ~~represents~~stands for an ethylene group, and ~~where~~

n1, n2 and n3 are selected ~~in such a way that~~ the molecular weight of the macromer M or polymer P is greater than or equal to 2,000.

7. (Currently Amended) The mMethod according to Claim 1 ~~for hair treatment~~, wherein

~~the defined shape a hairstyle (permanent shape) programmed by a method according to one of the Claims 1 to 6 is heated to a temperature above  $T_{trans}$ ,~~

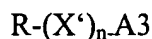
~~the hair is brought into a second (temporary) shape, and~~

——the second shape is fixed by ~~means of~~ cooling to a temperature below  $T_{trans}$ .

8. (Currently Amended) The mMethod according to Claim 7, wherein the fixed second shape for the recovery of a hairstyle (permanent shape) previously programmed by means of a method according to one of the Claims 1 to 6, wherein a hairstyle in a temporary shape according to Claim 7 or a hairstyle deformed by means of cold forming is heated to a temperature above  $T_{trans}$ .

9. (Currently Amended) The mMethod according to Claim 1 one of the preceding claims, wherein characterised in that the composition additionally contains a macromer with only one chemically reactive group located at a terminal position or a side position.

10. (Currently Amended) The mMethod according to Claim 9, wherein characterised in that the additional macromer has is selected from compounds with the general formula:



wherein R represents designates a monovalent organic residue, A3 represents designates a reactive, chemically cross-linkable group, and  $-(X')_n-$  represents designates a divalent, thermoplastic polymer or oligomer segment.

11. (Currently Amended) The mMethod according to Claim 10, wherein characterised in that the additional macromer is selected from polyalkylene glycols substituted with an acrylate group or methacrylate group or from its monoalkyl ethers and block copolymers.

12. (Currently Amended) The mMethod according to Claim 1, wherein characterised in that at least one shape memory polymer P is used and that the shaping of the hair takes place under heating to a temperature of at least  $T'_{trans}$  and that the subsequent fixing of the hair shape takes place by cooling to a temperature below  $T'_{trans}$ .

13. (Currently Amended) The mMethod according to Claim 12 for hair treatment, wherein shaping of the hair takes place under heating

—— ~~a hairstyle (permanent shape) programmed by a method according to Claim 12 is heated~~ to a temperature between  $T'_{trans}$  and  $T_{trans}$ ,  
—— the hair is brought into a second (temporary) shape, and  
—— the second shape is fixed by means of cooling to a temperature below  $T'_{trans}$ .

14. (Currently Amended) The mMethod according to Claim 12 for reprogramming a hairstyle (permanent shape) previously programmed by means of a method according to claim 12 into a new permanent shape, wherein shaping of the hair takes place under heating

—— ~~the hairstyle is heated~~ to a temperature above  $T'_{trans}$ ,  
—— ~~and the hair is~~ brought into a new shape, and  
—— the new shape is subsequently fixed by means of cooling to a temperature below  $T'_{trans}$ .

15. (Currently Amended) The mMethod according to Claim 1 one of the Claims 12 to 14, wherein characterised in that the shape memory polymer P has a degree of crystallinity of from 3 to 80%, and that the ratio of the moduli of elasticity below and above  $T_{trans}$  is at least 20.

16. (Currently Amended) A cCosmetic composition comprising containing, in a suitable cosmetic foundation, at least one active ingredient selected from macromers  $M_1$ , wherein according to one of the Claims 1 to 6 macromer M comprises:

a) cross-linkable regions that are cross-linkable through chemical bonds,  
b) thermoplastic regions that are not chemically cross-linkable, and  
c) the shape memory polymer formed after cross-linking has at least one transition temperature  $T_{trans}$ .

17. (Currently Amended) The cComposition according to Claim 16,  
wherein characterised in that the active ingredient is present contained in an amount of from 0.01  
to 25 percent by weight.

18. (Currently Amended) The cComposition according to one of the Claim  
16 Claims 16 to 17, further comprising characterised in that from 0.01 to 25 percent by weight of  
at least one additional active ingredient is contained, said active ingredient being selected from  
macromers with only one chemically reactive group located at a terminal position or a side  
position, polymers P according to one of the Claims 1 to 6, hair-care substances, hair-fixing  
substances and hair-colouring substances, wherein polymer P comprises:

a) at least one hard segment that can be cross-linked by means of  
physical interaction, said hard segment having a first transition temperature  $T'_{trans}$ , which is above  
room temperature, and

b) at least one soft segment with a second transition temperature  $T_{trans}$   
which is lower than  $T'_{trans}$ .

19. (Currently Amended) A cCosmetic substance comprising containing a  
composition according to Claim 16 one of the Claims 16 to 18, characterised in that it is present  
in the form of a lotion, a spray lotion, a cream, a gel, a foam-gel, an aerosol spray, a non-aerosol  
spray, an aerosol foam, a non-aerosol foam, an o/w or a w/o emulsion, a micro-emulsion or a hair  
wax.

20. (Canceled)